SIEMENS

PATENT
Attorney Docket No. 2003P00694WOUS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventor:	Stefan Hoffmann	Group Art Unit:	3741
Serial No.:	10/561,641	Examiner:	P. Wongwian
Filed:	December 20, 2005	Confirmation No.:	6107

Title: OPEN COOLED COMPONENT FOR A GAS TURBINE, COMBUSTION CHAMBER, AND GAS TURBINE

Mail Stop Appeal Brief - Patent
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPELLANT'S BRIEF UNDER 37 CFR 41.37

This brief is in furtherance of the Notice of Appeal filed in this application on April 30, 2009.

1. REAL PARTY IN INTEREST - 37 CFR 41.37(c)(1)(i)

The real party in interest in this Appeal is the assignee Siemens Aktiengesellschaft.

2. RELATED APPEALS AND INTERFERENCES - 37 CFR 41.37(c)(1)(ii)

There is no other appeal, interference or judicial proceeding that is related to or that will directly affect, or that will be directly affected by, or that will have a bearing on the Board's decision in this Appeal.

3. STATUS OF CLAIMS - 37 CFR 41.37(c)(1)(iii)

Claims pending: 11-16 and 19

Claims cancelled: 1-10 and 17-18

Claims withdrawn but not cancelled: None

Claims allowed: None

Claims objected to: None

Claims rejected: 11-16 and 19

The claims on appeal are 11-16 and 19.

4. STATUS OF AMENDMENTS - 37 CFR 41.37(c)(1)(iv)

An amendment was filed under 37 C.F.R. §1.116 on March 6, 2009. The Advisory Action mailed 03/20/2009 does not show on Form PTOL-303 whether or not the amendment was entered, but comments made by the Examiner indicate that the amendment was entered and that the rejections were sustained.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER- 37 CFR 41.37(c)(1)(v)

This invention relates generally to an open-cooled component for a gas turbine.

Independent claim 11 is directed to an open-cooled blade for a gas turbine as described in the specification at page 6 paragraph [0034]. The blade comprising a root portion as described in the specification at page 6 paragraph [0034]; an airfoil portion, wherein the airfoil portion includes an outer wall exposed to a hot gas as described in the specification at page 1 paragraph [002] and page 6 paragraph [0034], a first cavity partly defined by the outer wall and for a first medium as described in the specification at page 1 paragraph [002], a plurality of through-openings arranged in the outer wall as described in the specification at page 1 paragraph [002] where the through-openings open into the first cavity on a first side and into the hot-gas space on

a second side as described in the specification at page 6 paragraphs [0034] to [0035], and a second cavity for admixing a second medium as described in the specification at page 6 paragraph [0034] to [0036], the second cavity being fluidically connected to the through-openings as described in the specification at page 6 paragraph [0034] to [0036], wherein the second cavity is formed by supply passages that are provided in the outer wall and are connected via transverse passages to the through-openings designed as through-bores as described in the specification at page 6 paragraph [0034] to [0036], so that the two media cannot be mixed until inside the through-bores as described in the specification at page 7 paragraph [0038].

Independent claim 19 is directed to a gas turbine as described in the specification at page 1 paragraph [002], including a compressor section as described in the specification at page 1 paragraph [002]; a turbine section as described in the specification at page 1 paragraph [002]; a combustion chamber as described in the specification at page 1 paragraph [002]; and as described in the specification at page 1 paragraph [002]; a plurality of blades where each blade includes an outer wall exposed to a hot gas as described in the specification at page 1 paragraph [002] and page 6 paragraph [0034], a first cavity partly defined by the outer wall and for a first medium as described in the specification at page 1 paragraph [002], a plurality of through-openings arranged in the outer wall as described in the specification at page 1 paragraph [002] where the through-openings open into the first cavity on a first side and into the hot-gas space on a second side as described in the specification at page 6 paragraphs [0034] to [0035], and a second cavity for admixing a second medium, the second cavity being fluidically connected to the through-openings as described in the specification at page 6 paragraph [0034] to [0036], wherein the second cavity is formed by supply passages provided in the outer wall and connected via transverse passages to the through-openings designed as through-bores as described in the specification at page 6 paragraph [0034] to [0036], so that the two media cannot be mixed until inside the through-bores as described in the specification at page 7 paragraph [0038].

6. GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL - 37 CFR 41.37(c)(1)(vi)

The grounds for rejection for claims 11-15 and 19 is that each claim is anticipated under 35 USC § 102(b) by Birkner (WO 9911420 / USPN 6,582,194). Claim 16 stands rejected under

35 U.S.C § 103(a) as being unpatentable over Birkner in view of Triebbnigg (USPN 2,647,368) or Stoltz (USPN 3,037,351) or Johnson (USPN 2,981,066).

7. ARGUMENT 37 CFR 41.37(c)(1)(vii)

Arguments applicable to all claims rejected under Section 102:

Claims 11-15 and 19 stand rejected under 35 U.S.C § 102(b), the Examiner contending that these claims are anticipated by Birkner et al (USPN 6,582,194), hereinafter Birkner. Appellant traverses these rejections because Birkner fails to teach each and every element of as set forth in independent claims 11 and 19. Claims 11 and 19 contain similar limitations which are argued together below, and all of these claims rise and fall together with respect to this rejection.

MPEP 2131 provides that a claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described in a single prior art reference. The identical invention must be shown in as complete detail as contained in the claims.

The prior art reference relied upon by the Examiner in the § 102(b) rejection does not contain every element and limitation recited in independent claims 11 and 19.

Claims 11 and 19 both recite in part:

> an outer wall exposed to a hot gas,
> a first cavity partly defined by the outer wall and for a first medium,
> a plurality of through-openings arranged in the outer wall where the through-openings open into the first cavity on a first side and into the hot-gas space on a second side, and
> a second cavity for admixing a second medium, the second cavity being fluidically connected to the through-openings,
> wherein the second cavity is formed by supply passages that are provided in the outer wall and are connected via transverse passages to the through-openings designed as through-bores, so that the two media cannot be mixed until inside the through-bores.

In contrast to claims 11 and 19, Birkner teaches a hollow cooled turbine blade for use in a gas turbine where the blade 1 has a hollow interior 4 (see Fig. 2; and col. 4, lines 20-24) that the Examiner has previously identified as cavity "A" in the final Office Communications of February 3, 2009 (OC). The hollow blade 1 has a wall 1 (see OC page 4, Fig. 5; and col. 4, lines 18-19), comprising a plurality of impact cooling bores 8 arranged between peg-like elevations 5

(see OC page 4, Fig. 5; and col. 4, lines 25-28). Bonded onto the top of the peg-like elevations 5 and surrounding the blade 1 is a shell like covering coat 9 (see OC page 4, Fig. 5; and col. 4, lines 42-60) where oblique film-cooling bores 10 are formed in the covering coat 9 to film cool the exterior of the blade in operation (see OC page 4, Fig. 5; and col. 4, line 65 to col. 5 line 5). The intermediate spaces 7 are therefore defined by the outer surface of the hollow blade 1, the inner surface of the covering coat 9 and the sides of the peg-like elevations 5 (see OC page 4, Fig. 5; and col. 4, lines 29-65). The blade functions where cooling air is directed from the hollow interior 4, through the impact cooling bores 8 into the intermediate spaces 7 and then out of the blade 1 through the oblique film-cooling bores 10 into the hot gas flow path (col. 4, line 65 to col. 5 line 5). Appellant points out that the blade of Birkner is configured such that the same fluid (cooling air) flows through all of the passages, hollow interior 4, impact cooling bores 8, intermediate spaces 7 and oblique film-cooling bores 10.

In the OC, the Examiner contends that Birkner teaches "an outer wall exposed to a hot gas 9, a first cavity A (see OC page 4, Fig. 5above) partly defined by the outer wall and for a first medium ...." Appellants respectfully submit that because the outer wall is item 9 (covering coat 9), then the first cavity, which must be "partly defined by the outer wall," must be the intermediate space 7, and not the hollow blade interior 4 (or "A") as contended by the Examiner.

The Examiner further contends that the "plurality of through openings," which the Examiner identified as holes "B" are "oblique film-cooling bores 10" and "impact cooling bores 8." However, the language of claims 11 and 19 require that the "plurality of through openings" must be "arranged in the outer wall where the through-openings open into the first cavity on a first side and into the hot-gas space on a second side," which therefore makes the "through openings" of Birkner **only** the "oblique film-cooling bores 10," and not the "impact cooling bores 8" as identified by the Examiner (see Birkner col. 5, lines 1-5; and OC page 4, Fig. 5).

Moreover, The Examiner contends that the second cavity is the space identified as "D" (see OC page 4, Fig. 5), which is the "intermediate space 7." However, as discussed above, the intermediate space 7 must be the first cavity. Since the first cavity and the second cavity are distinct claim limitations, **Birkner does not have a second cavity**. Therefore, if Birkner does not have a second cavity it cannot teach "a second cavity ... formed by supply passages that are provided in the outer wall and are connected via transverse passages to the through-openings designed as through-bores," as recited in claims 11 and 19.

Applicant respectfully submits that Birkner does not teach each and every element of claims 11 and 19. Therefore, the section 102 rejections of claims 11 and 19 are improper and must fail as required by MPEP 2131.

Argument applicable to claim 16 rejected under Section 103:

Claim 16 stands rejected under 35 U.S.C § 103(a) as being unpatentable over Birkner in view of Triebbnigg (USPN 2,647,368) or Stoltz (USPN 3,037,351) or Johnson (USPN 2,981,066). The primary reference to Birkner fails to teach each and every element of independent claim 11, from which claim 16 depends, as argued above. The cited secondary references fail to correct the deficiencies of the primary reference, and claim 16 rises or falls together with independent claim 11.

8. CLAIMS APPENDIX - 37 CFR 41.37(c) (1) (viii).

A copy of the claims involved in this appeal is attached as a claims appendix under 37 CFR 41.37(c) (1) (viii).

9. EVIDENCE APPENDIX - 37 CFR 41.37(c) (1) (ix)

None is required under 37 CFR 41.37(c) (1) (ix).

10. RELATED PROCEEDINGS APPENDIX - 37 CFR 41.37(c) (1) (x)

None is required under 37 CFR 41.37(c) (1) (x).

Respectfully submitted,

Dated: June 30, 2009

By: Janet D. Hood

Janet D. Hood
Registration No. 61,142
(407) 736-4234

Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, New Jersey 08830

APPENDIX OF CLAIMS ON APPEAL

11. An open-cooled blade for a gas turbine, comprising:

a root portion; and

an airfoil portion, wherein the airfoil portion comprises:

an outer wall exposed to a hot gas,

a first cavity partly defined by the outer wall and for a first medium,

a plurality of through-openings arranged in the outer wall where the through-openings open into the first cavity on a first side and into the hot-gas space on a second side, and

a second cavity for admixing a second medium, the second cavity being fluidically connected to the through-openings,

wherein the second cavity is formed by supply passages that are provided in the outer wall and are connected via transverse passages to the through-openings designed as through-bores, so that the two media cannot be mixed until inside the through-bores.

12. The blade as claimed in claim 11, wherein the outer wall has a multiplicity of through-bores, a multiplicity of supply passages running between the bores, and a multiplicity of further transverse passages linking the supply passages with the through-bores.

13. The blade as claimed in claim 11, wherein the outer wall has at least two layers which can be connected to one another.

14. The blade as claimed in claim 11, wherein the passages are incorporated between two layers in a layer surface.

15. The blade as claimed in claim 11, wherein the first cavity is connected to a first fluid source and the supply passages can be connected to a second fluid source.

16. The blade as claimed in claim 15, wherein one of the two fluid sources is an oxidation source and the other fluid source is a fuel source.

19. A gas turbine, comprising:

a compressor section;

a turbine section;

a combustion chamber; and

a plurality of blades where each blade comprises:

an outer wall exposed to a hot gas,

a first cavity partly defined by the outer wall and for a first medium,

a plurality of through-openings arranged in the outer wall where the through-openings open into the first cavity on a first side and into the hot-gas space on a second side, and

a second cavity for admixing a second medium, the second cavity being fluidically connected to the through-openings,

wherein the second cavity is formed by supply passages provided in the outer wall and connected via transverse passages to the through-openings designed as through-bores, so that the two media cannot be mixed until inside the through-bores.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.